



U.S. GENERAL SERVICES ADMINISTRATION

FEDERAL CENTER SOUTH BUILDING 1202

U.S. ARMY CORPS OF ENGINEERS
SEATTLE DISTRICT HEADQUARTERS

ZGF

ZIMMER GÜNSUL FRASCA ARCHITECTS LLP



USACE

1202



Formal east facing entrance emblematic of the U.S. Army Corps of Engineers mission of "Building Strong."

U.S. GENERAL SERVICES ADMINISTRATION
FEDERAL CENTER SOUTH BUILDING 1202
U.S. Army Corps of Engineers Seattle District Headquarters

OWNER

U.S. General Services Administration

TENANT

U.S. Army Corps of Engineers

CONSTRUCTION MANAGER AND COMMISSIONING SERVICES

Heery

LOCATION

4735 East Marginal Way, Seattle, Washington 98134

CONSTRUCTION START DATE

July 2010

COMPLETION DATE

October 2012

GENERAL CONTRACTOR

Sellen Construction

ARCHITECT

ZGF Architects LLP

CONSULTANTS

STRUCTURAL / CIVIL ENGINEER KPFF Consulting Engineers

MECHANICAL / PLUMBING ENGINEER WSP Flack + Kurtz / University Mechanical

HIGH PERFORMANCE DESIGN Built Ecology

LIGHTING WSP Flack + Kurtz

TELECOMMUNICATIONS WSP Flack + Kurtz

ELECTRICAL ENGINEER Lane Coburn & Associates, LLC / Sequoyah Electric, LLC

LANDSCAPE ARCHITECTURE SiteWorkshop LLC

GRAPHICS AND SIGNAGE Studio SC

ELEVATOR Lerch Bates

ACOUSTICAL The Greenbusch Group

LIFE SAFETY Rolf Jensen & Associates / Tuazon Engineering

GEOTECHNICAL / SOILS ENGINEER Hart Crowser & Associates, Inc.

PHOTOGRAPHY

Images by Benjamin Benschneider, except where noted by Lara Swimmer

SIZE

TOTAL 209,000 SF (\$275 / SF)

OFFICE AND CONFERENCE SPACE 180,000 SF

PROJECT COST \$74 million

CONSTRUCTION COST \$65 million

CONSTRUCTION METHOD Design-Build

FUNDING American Recovery and Reinvestment Act (ARRA)

GREEN CERTIFICATION

Targeting LEED (Leadership in Energy and Environmental Design) Gold Certification from the U.S. Green Building Council. 2030 Challenge compliant.

The building is expected to perform in the top 1% of energy-efficient office buildings in the nation.



DESIGN OVERVIEW

Federal Center South Building 1202 is the result of both the 2009 American Recovery and Reinvestment Act (ARRA), which focused on improving our nation's infrastructure and creating jobs, and the U.S. General Services Administration's (GSA) Design Excellence program which establishes nationwide policies and procedures for selecting the finest architects and integrated design teams for our nation's federal buildings. With aggressive mandates for reuse and energy-performance, the new 1202 building transforms a 4.6 acre brownfield site into a highly flexible and sustainable 209,000 SF regional headquarters for the U.S. Army Corps of Engineers (USACE) Northwest District.

Using a Design-Build delivery model to get ARRA funds committed as quickly as possible, the Sellen Construction and ZGF Architects LLP team developed an integrated design and construction solution that fuses programmatic, functional and aesthetic objectives with a new standard for high-performance, cost-effective and sustainable workplace environments. The project was planned and designed in under 18 weeks in order to guarantee the performance-based contract that met GSA's construction budget, energy performance goals and an

aggressive design and construction schedule starting with a design competition at the beginning of 2010 and resulting in a completed building before the end of 2012.

The "oxbow" design solution provides an ideal workplace environment for the USACE emblematic of their mission of "Building Strong." The building's form—reflecting the natural oxbows past and present in the course of the adjacent Duwamish Waterway—is functional and flexible to accommodate the USACE's nearly constantly changing team-based work. The diagrid structure extending around the building meets GSA's security requirements for progressive collapse, ensuring the building will remain standing should one of the column elements be compromised. The exterior stainless steel shingle cladding emphasizes "Building Strong" and complements the nearby historic 1930s Albert Kahn-designed 1201 building. The dramatic, daylit wood-clad atrium—the "commons"—features timber reclaimed from the former warehouse that stood on the site and serves as the social heart of the building.



NATURAL FORMS



COMMUNITY



CONNECTIVITY



INSIDE/OUT



TRANSPARENCY



FLEXIBILITY



NEIGHBORHOODS



STRUCTURE



BUILDING FACES



VIEWS



BUILDING FORM

The “oxbow” design solution provides the greatest flexibility for work groups to expand and contract as needed, while the narrow floor plate optimizes daylight penetration. All three levels surround the central atrium—the “commons”—the social heart of the building where all shared services are located.

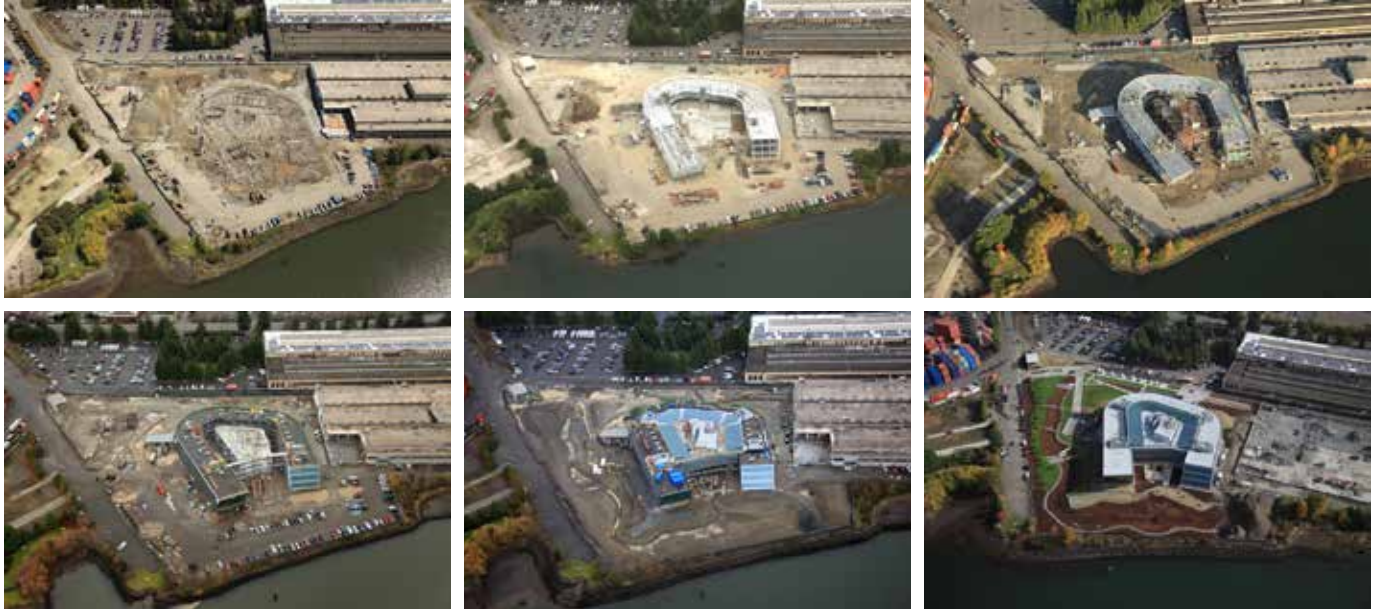
The exposed “diagrid” structure and mechanical systems of the 1202 building exemplify the engineering rigor, strength and stability of the USACE’s mission of “Building Strong.” Diagonal columns create a distinct exterior form, and the extensive use of glass defines its sleek and industrial aesthetic.

The perimeter diagrid design integrates sloped columns and spandrel grinders into a single structural system to provide lateral resistance and a redundant support system for floor framing. The diagrid functions as a progressive collapse system for the structure, meeting GSA’s guidelines for all new federal office buildings.

The building roof form is distinguished by a sloped atrium skylight and clerestory, similar to the roof form of the adjacent 1201 building. The building is clad in stainless steel shingles that reflect light variations from shingle to shingle and give the building the allusion of being covered by fish scales, a reference to the location’s maritime history. Vertical and horizontal sun-shading elements contribute detail and texture to the facade.

PERFORMANCE GUIDES THE BUILDING SHAPE





SITE TRANSFORMATION

The 1202 building complements the adjacent 1932 Albert Kahn-designed 1201 building, originally an assembly plant for Ford Motor Company, and at the time, a recovery act project of its own. The new building reflects the site's industrial past while modernizing the campus to meet the 21st century needs of the USACE.

The building is sited to take advantage of natural daylight and views. The formal, "urban" east face provides a secure, well-defined front door. The less formal, "natural" west face opens to the vast panorama of the Duwamish Waterway and West Seattle.

The building is also served by a secure, formally landscaped, north-south campus circulation road which helps to clearly organize and connect current and future improvements to the campus. The design provides pedestrian circulation throughout the site becoming more natural and meandering toward the river's edge.

The development of the brownfield site included the restoration of wetlands, converting 4.6 acres of hardscape to green space.





NATURAL RIVER ZONE

FORMAL CAMPUS ZONE

Diagonal Ave. South

Entry Drive

Park

VIEWS

GREEN ZONE

Federal Center
Courtyard

Urban Face

Building
1202

Natural Face

Duwamish
Waterway

Wetlands

Demolished
1202 Warehouse

Historic
Albert Kahn
Building 1201

E. Marginal Way

Kellogg
Island

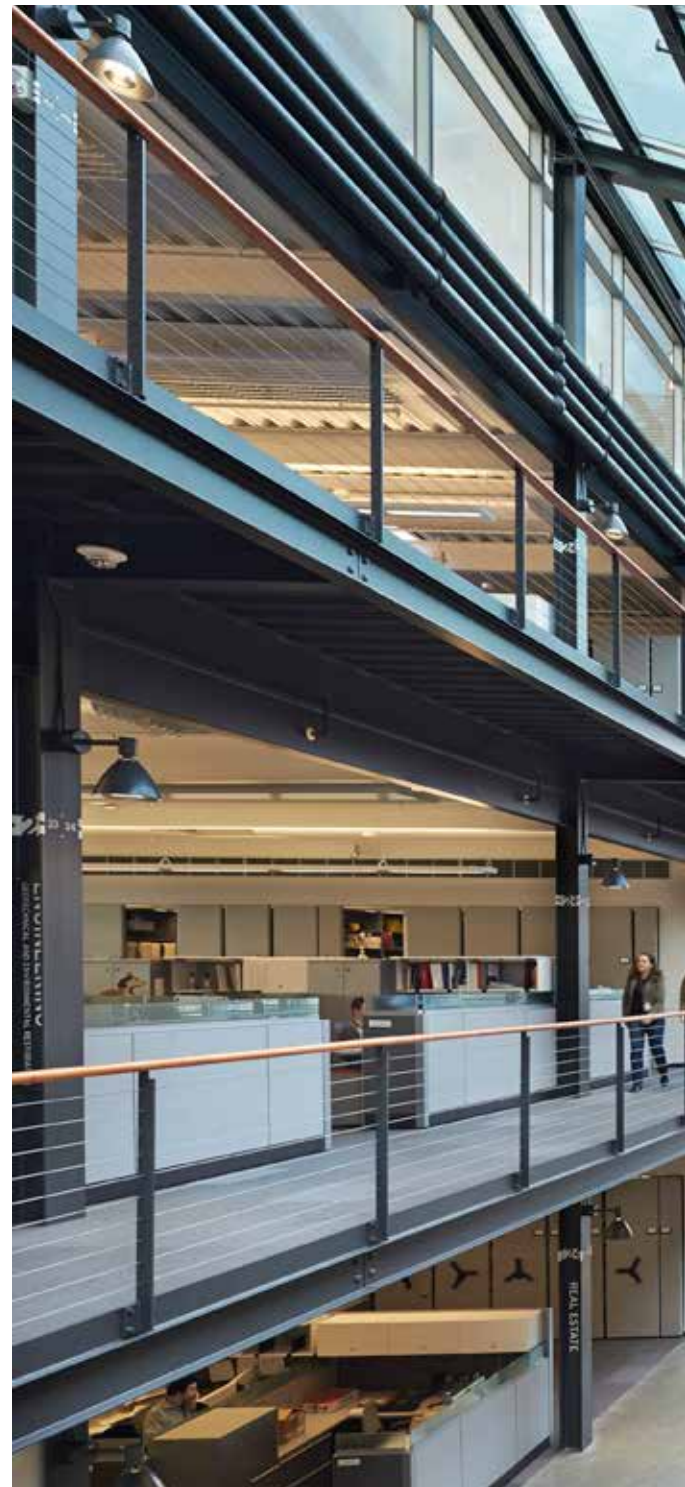
Seasonal Sun Angles



Central commons bathed in natural daylight flanked by open-plan workstations located along the perimeter.



2
→
01-15
←
16-29



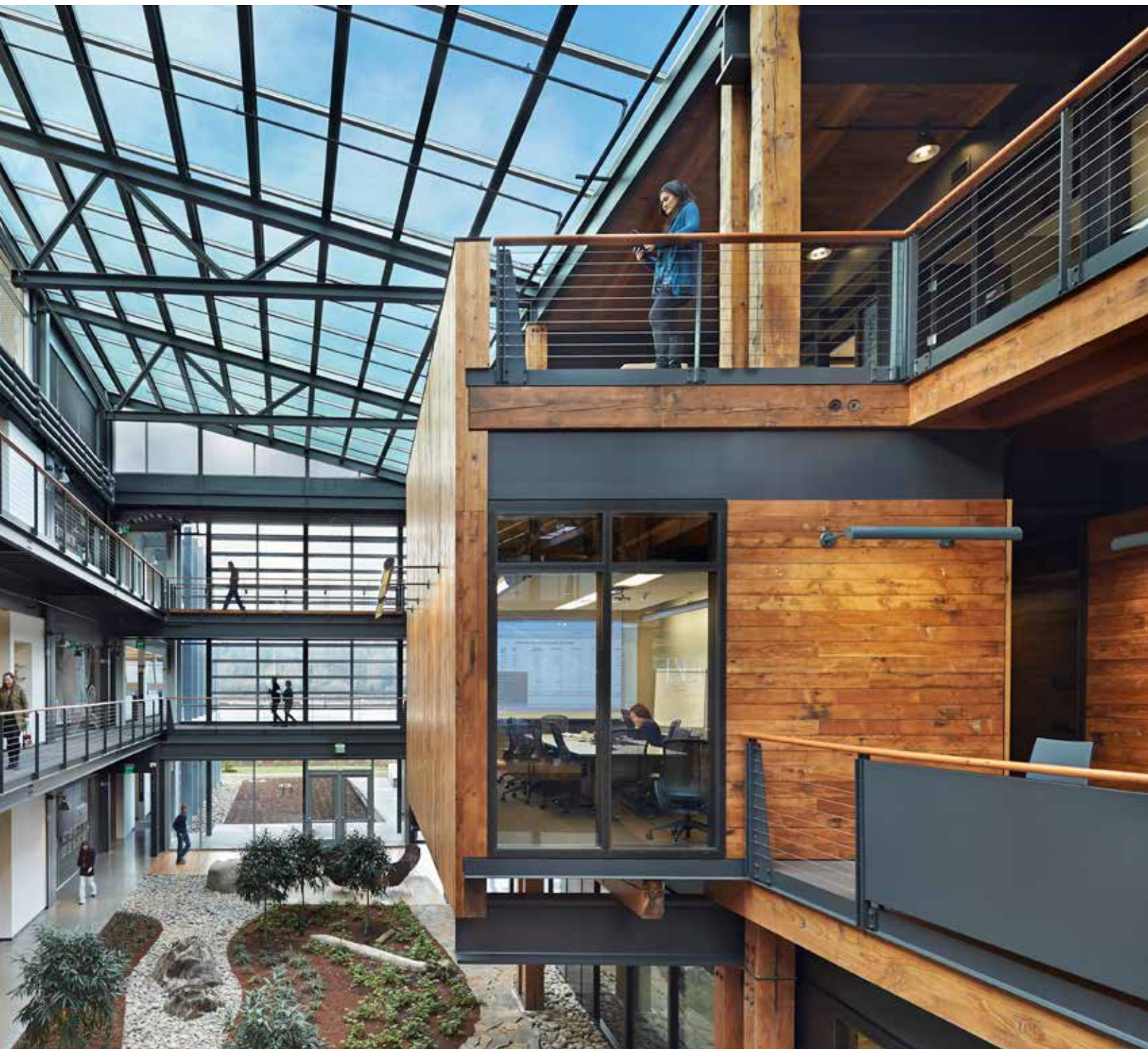
WORKPLACE ENVIRONMENT

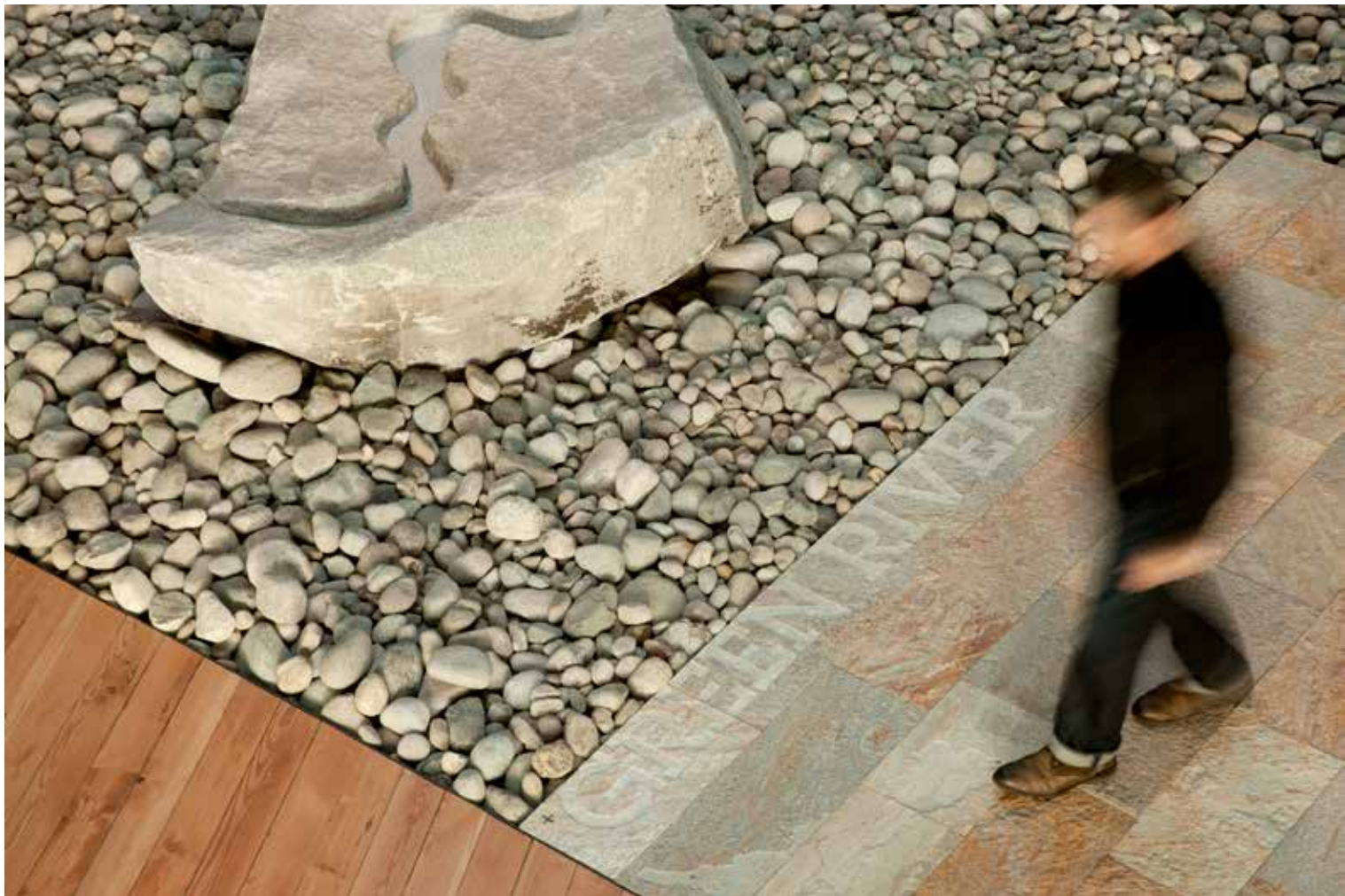
Organized around the work of the USACE, the open and flexible “oxbow” building form is part of an integrated strategy to provide a completely unified and flexible footprint while creating a collective identity for all departments and the 700 employees who occupy the building.

Open-plan workstations surround the central “commons” which forms the social heart of the building and houses all shared resources, including conference rooms, kitchenettes, the library and informal seating areas to encourage interaction and create a sense of community.

The workstation cubicle height of 50 inches provides virtually everyone with a view to the outside. The narrow 60 foot floorplate of the office bar optimizes daylight penetration to reach nearly all workstations and reduce the need for artificial lighting and associated energy costs.

Atrium bridges and stairs clad in reclaimed timber decking connect people throughout the building and are adjacent to informal seating and “touch-down” work surfaces to encourage impromptu collaboration.





WAYFINDING AND SIGNAGE

Reinforcing the building's connection to the site, the wayfinding and signage system is organized into four quadrants named for the four tributaries that formed the historic Duwamish River watershed—the White River, Green River, Black River and Cedar River. Two monumental stairwells located on the west ends of the “oxbow” link all three floors and feature a dramatic glass window wall showcasing geographical and technical data about the quadrant's namesake river. Stairwells are painted a distinct quadrant color, creating an architectural lightbox that reinforces wayfinding. Reclaimed timber reused throughout the “commons” is etched with additional geographic information relevant to the site and the USACE's mission.



ABOVE Green River signage quadrant. **RIGHT** Commons gathering space.
OPPOSITE PAGE Stairwell wayfinding graphic. **PHOTOGRAPHER** Lara Swimmer.





INTERIOR LANDSCAPE

Creating an indoor campus environment, in addition to that on the exterior, was important to enhancing the concept of community and collective identity within the building and supports the notion of biophilia—the instinctive bond between human beings and living systems.

Variation in hardscape materials and surface textures creates visual interest. Meandering bands of river rocks and scattered boulders—flowing with harvested rainwater—weave through crushed rock to symbolize the four tributaries of the Duwamish Waterway and celebrate the mission and work of the USACE. Driftwood and reclaimed log planks create the impression of a flowing river.





Duwardale
47° 26' 25.84" N
122° 15' 05.90" W

length
1500m

47° 26' 25.84" N
122° 15' 05.90" W
Horizon





Executive suite conference room.
Table made from recycled timber.



Executive suite office and meeting space.

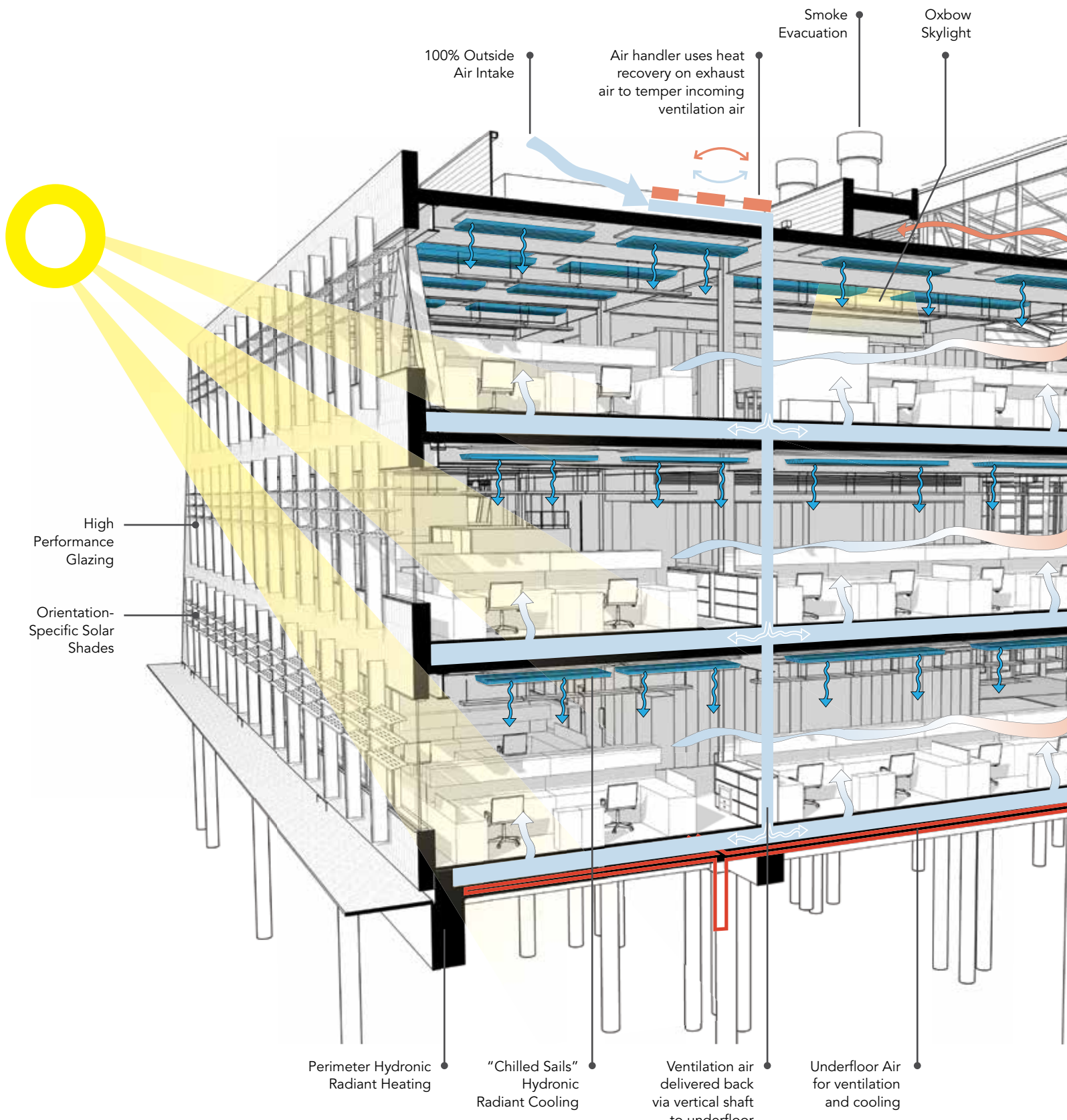


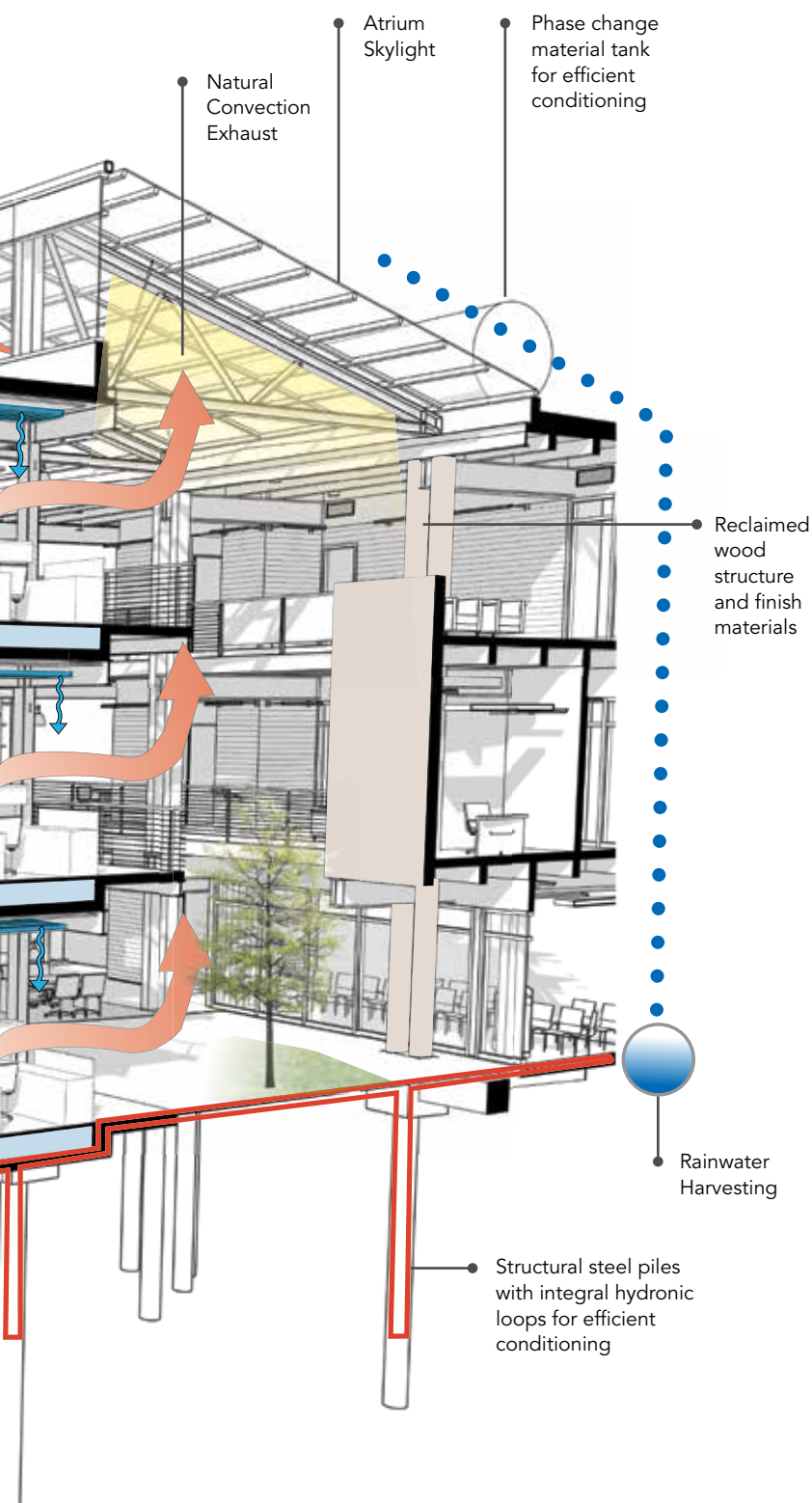
TIMBER RECLAMATION

In response to the ARRA funding requirement to reuse portions of the existing warehouse that previously stood on the site in the design of the new 1202 building, approximately 200,000 board feet of salvageable structural timber and 100,000 board feet of decking (92%) was reclaimed to form the building's foundation, structural system, and the interior cladding of the "commons."









HIGH-PERFORMANCE GREEN BUILDING / SUSTAINABLE DESIGN

Aggressive sustainable design, energy and water performance requirements were met and exceeded.

PERFORMANCE REQUIREMENTS

LEED **Gold** certification

Energy Use Index (EUI) of **27.6** KBtu/sf/year

100% filtered outside air

Energy Star Score of **97**

Energy Performance must be **30%** better than ASHRAE 90.1 2007

ACTUAL RESULTS

LEED **Gold** certification, tracking 79 points toward **Platinum**

Energy Use Index (EUI) of **20.3** KBtu/sf/year

100% filtered outside air

Energy Star Score of **100**

Energy Performance **40%** better than ASHRAE 90.1 2007

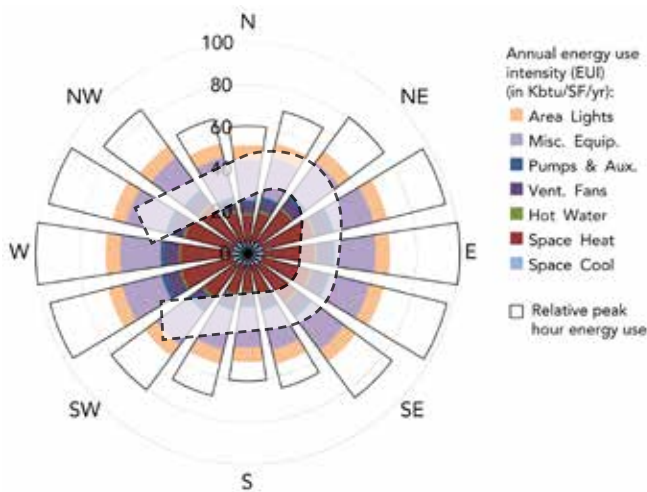
The design solution includes optimized building orientation and integrates active and passive systems, materials and strategies. The 1202 building will perform within the **top 1%** of energy-efficient office buildings in the U.S. without sacrificing comfort, amenities or innovative design.

A one year measurement and verification phase with a 0.5% incentive payment of the contract value will guarantee that the building can operate in the energy-efficient manner in which it was designed.

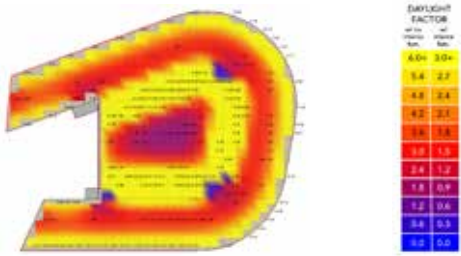
INTEGRATED AND OPTIMIZED BUILDING SYSTEMS

DEMAND REDUCTION

Conventional building systems have been replaced with efficient hydronic heating and cooling, and a healthier, more energy-efficient 100% outside air underfloor air distribution system. To enable these systems to perform at an optimal capacity within the project budget, an ultra-efficient building envelope—offering a high level of insulation, while transmitting ample daylight—reduces the magnitude of heating and cooling demand and optimizes the use of daylight within.



Energy studies analyzed the effect of building orientation on annual and peak energy, which drove an optimized north/south orientation, and minimized the western exposure to meet the project's ambitious energy goals while reducing the size and cost of mechanical equipment.



Daylight studies analyzed the depth of the office bar and the proportion of the atrium to optimize the potential for maximum daylight penetration.

PASSIVE SYSTEMS

Energy and water introduced into the building are leveraged to their highest possible use. Conditioned air is delivered to the workspace via air handling units and exhausted passively through the atrium to high-efficiency heat recovery systems. Available daylight, controlled for glare and unwanted heat gain with a varying degree of frit across the atrium skylight to respond to sun exposure, is directed to the office floor plates to offset the maximum possible amount of electric lighting.

ACTIVE SYSTEMS

High-efficiency boilers, cooling towers and heat pumps generate the required heating and cooling. The equipment efficiencies are high per current best practice, with the difference being that design integration has resulted in systems substantially smaller than would conventionally be required. Electric lighting design is a simple, repetitive task/ambient design that achieves a building-wide lighting power density of approximately 0.72 W/SF or lower.

PHASE CHANGE MATERIAL AND THERMAL STORAGE

Daily and seasonal patterns of sun, wind and light create a highly variable range of exterior conditions that the building attenuates to maintain internal comfort. The design capitalizes on these cyclic patterns to create thermal energy when available and store it for use when required. A thermal storage tank containing Phase Change Material (PCM)—a solution with a high heat of fusion that melts and solidifies at 55°F, a temperature that is often achieved in Seattle's mild climate, absorbing or releasing heat as it does so. Together, these two systems—one seasonal in nature and the other diurnal—reduce the amplitude of cyclical climate variation, and enable the building and its occupants to work with the natural world instead of against it.

RENEWABLES

With the most efficient energy being energy that is not required, the integrated design is developed to avoid the need for on-site renewable generation to meet the required energy goals. Life-cycle cost analysis of a solar domestic hot water system and supplemental photovoltaic system were both outside the range of acceptable return.

INTELLIGENT ENVELOPE

Orientation and massing optimize daylight while reducing solar heat gain. The U-shaped form of the office bar creates daylight access on both sides of the floor plate, providing natural light to over 90% of the building to enhance energy performance and human comfort.

SOLAR CONTROL

Exterior orientation-specific sun-shading elements, clerestory glazing, and internal adjustable window coverings control heat gain and glare while providing uninterrupted views to the outdoors, as well as time of day and weather condition awareness. The ribbon system is design with vertical blades across the entire perimeter. The system is augmented with horizontal sunshades tuned to the orientation starting with zero on the north and transitioning to one, two and three as the facade transitions around the oxbow from east to south. Peak cooling loads are targeted for a 30% reduction in the perimeter zone, resulting in a 10% reduction in the central plant cooling capacity.



LANDSCAPE

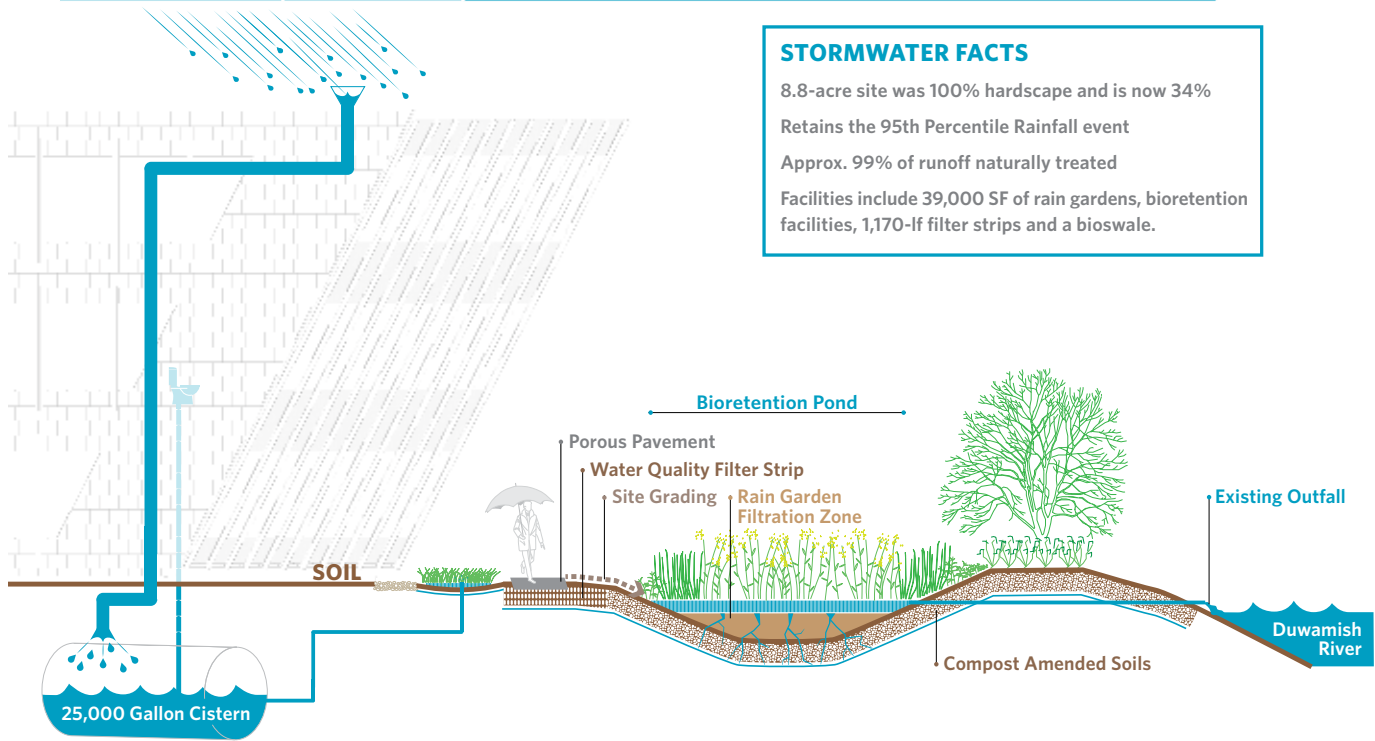
Building and Hardscape > Native and Adaptive Landscaping > River Ecosystem

SITE WATER

Gather and Treat in Rain Gardens > Series of Weirs Direct Water to West Bioretention Pond > Treated Runoff infiltrates and flows to the Duwamish River

BUILDING WATER

Gather and Store in Cistern > Treat with Ozone > Re-use for Irrigation / Grey Water for Toilets / Grey Water for Cooling Tower / Atrium Water Feature



WATER SAVINGS

On-site drainage run-off is treated within stormwater surface ponds, rain gardens and wet ponds. The runoff is collected around the perimeter of the site and directed to the western-most pond, mimicking natural site drainage patterns, and leveraging low-impact development techniques. The rainwater reuse system captures water from the roof and stores it in a 25,000-gallon cistern to be used for toilets, irrigation, a rooftop cooling tower and water features in the "commons." These systems provide required water quality treatment. A series of exterior rain gardens were designed to drain and treat a 95th percentile rain event entirely on-site eliminating the need for a connection to the City's stormwater system.

An estimated 430,000 gallons of rainwater will be harvested annually—providing a 79% reduction in potable water use for toilet flushing and a reduction of irrigation demand by an additional 14%. Potable domestic water use is reduced by 58% through efficient fixtures, low-water landscape and rainwater reuse.

RIGHT Water features use harvested rainwater.



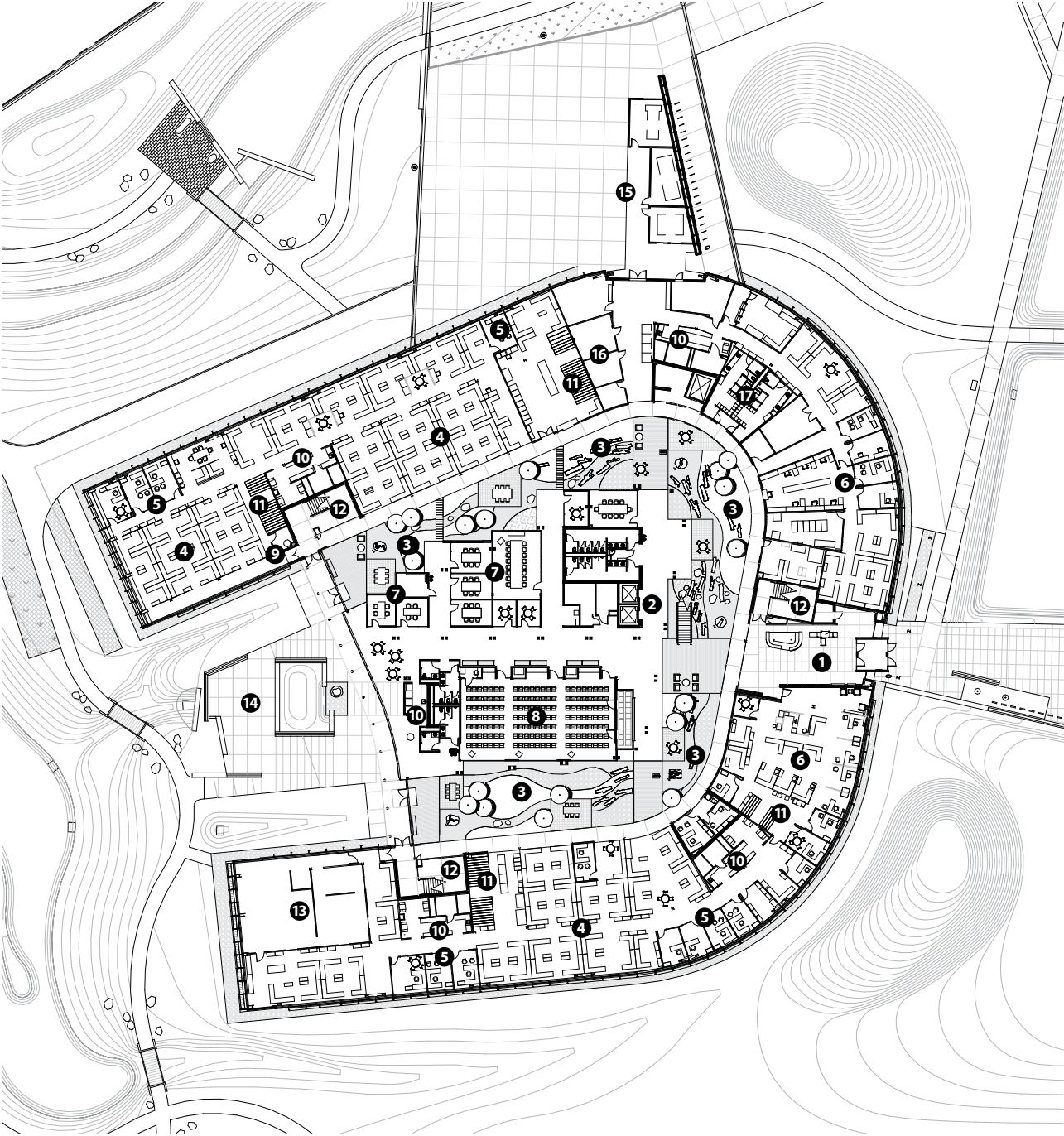


ABOVE West facing facade featuring rain garden.



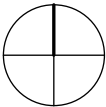


LEVEL 1

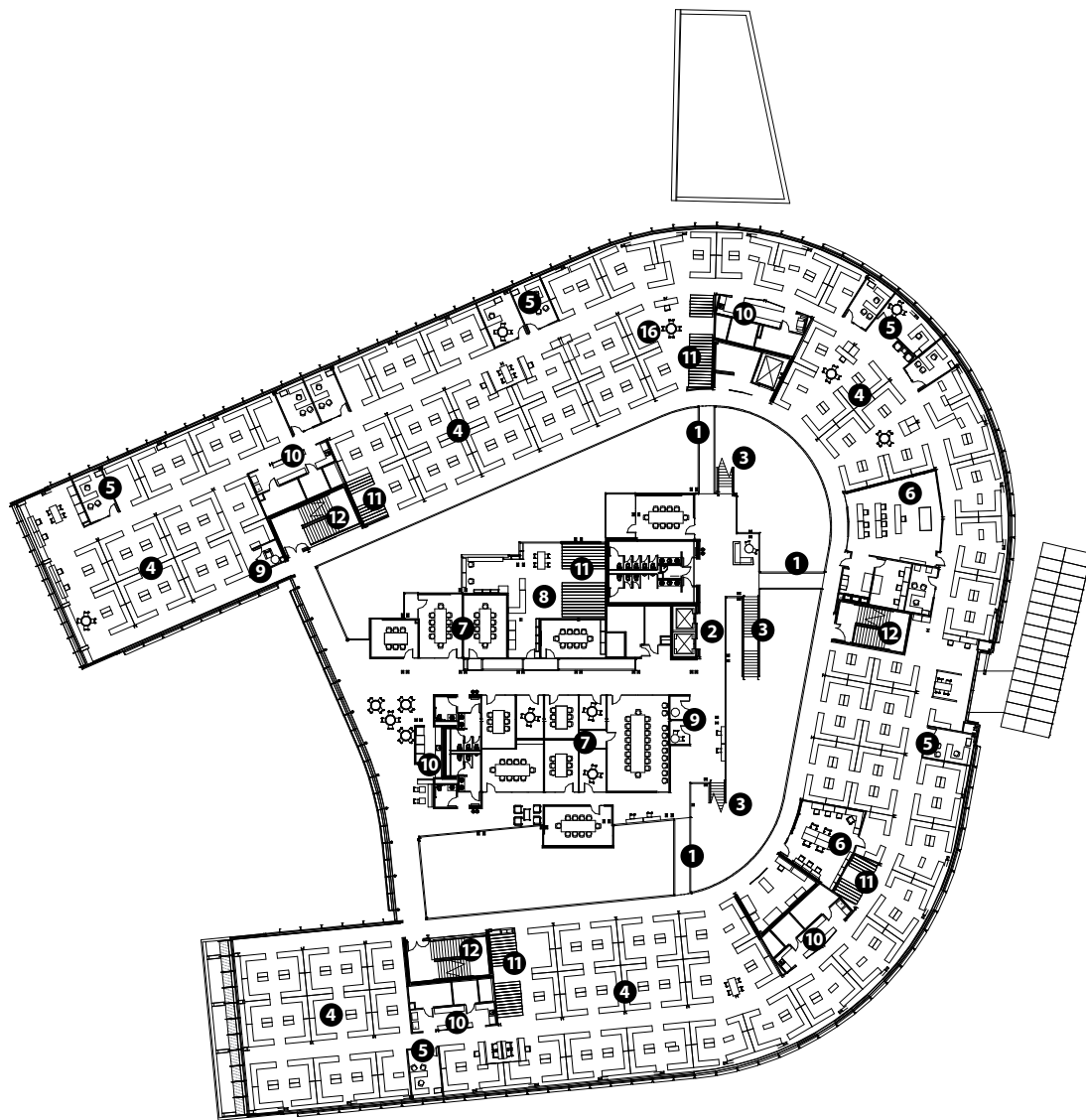


- | | |
|------------------------|--------------------------|
| 1 Lobby/Secured Entry | 10 Kitchenette |
| 2 Elevators | 11 High-Density Shelving |
| 3 Atrium Landscaping | 12 Exit Stair |
| 4 Open Office | 13 Wellness Center |
| 5 Private Office | 14 Plaza |
| 6 Private Office Suite | 15 Loading Dock |
| 7 Conference Rooms | 16 Utility Rooms |
| 8 Multi-Purpose Room | 17 Locker Room |
| 9 Focus Room | |

0 30 FT
1:800 10 M

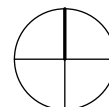


LEVEL 2

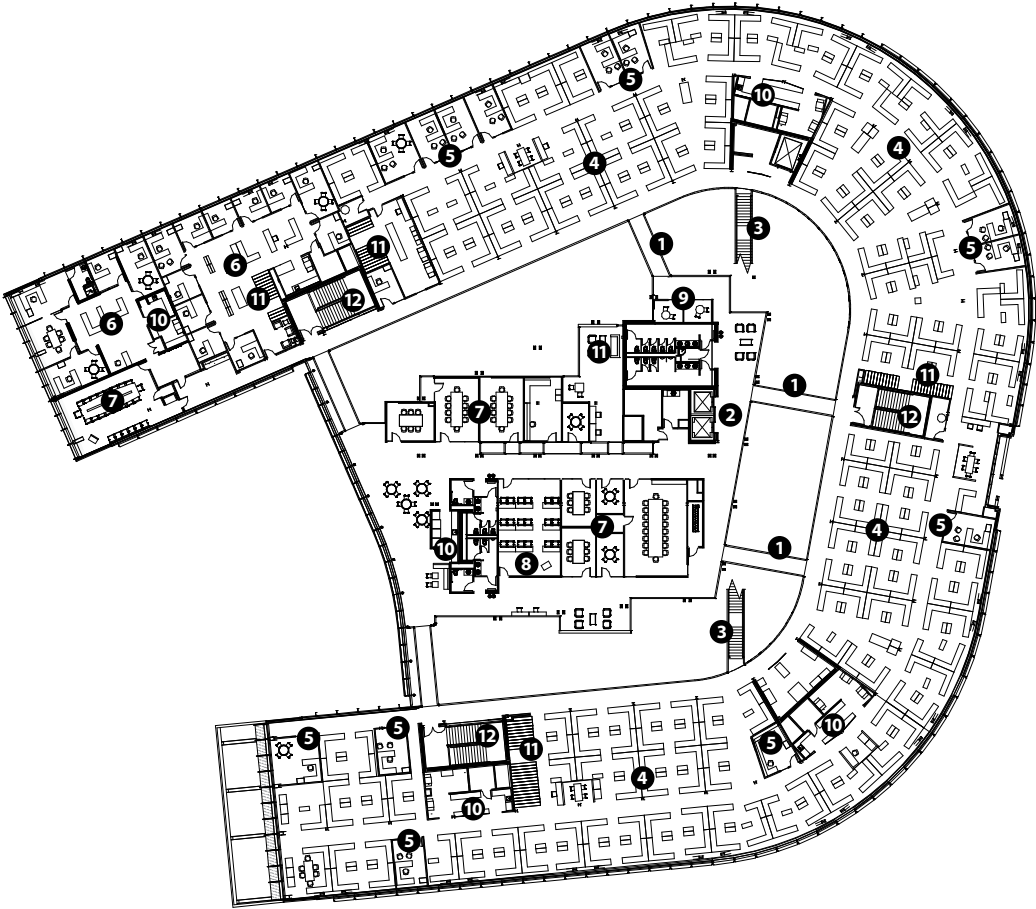


- | | |
|-------------------|--------------------------|
| 1 Bridges | 7 Conference Rooms |
| 2 Elevators | 8 Library |
| 3 Stairs | 9 Focus Room |
| 4 Open Office | 10 Kitchenette |
| 5 Private Office | 11 High-Density Shelving |
| 6 Department Room | 12 Exit Stair |

0 30 FT
1:800 10 M

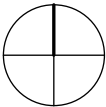


LEVEL 3



- | | |
|------------------------|--------------------------|
| 1 Bridges | 7 Conference Rooms |
| 2 Elevators | 8 Computer Training Room |
| 3 Stairs | 9 Focus Room |
| 4 Open Office | 10 Kitchenette |
| 5 Private Office | 11 High-Density Shelving |
| 6 Private Office Suite | 12 Exit Stair |

0 30 FT
1:800 10 M









CONTACT

Erin Zangari
925 Fourth Avenue, Suite 2400
Seattle, Washington 98104

TELEPHONE 206.521.3503

EMAIL erin.zangari@zgf.com

WEBSITE www.zgf.com



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